# OTARN-H Network Design Management Project

UNIVERSITY of TECHNOLOGY, MAURITIUS

Deadline: **27 July 2026**

Cohort: **BCNS24AFT1**

Module Weight: **30%**

## Aim

To foster the necessary team-work skills to plan, design, test and simulate a corporate network and show an appreciation of all the business requirements involved in producing a potential solution.

## Learning Outcomes

On completion of the project, the student should:

1. Have a knowledge of the basic hardware components of a communications network infrastructure;
2. Be familiar with the requirements of protocols, standards and the major standards bodies;
3. Have the ability to plan, design, test and simulate a secure, medium-size network;
4. Have developed expertise in identifying issues that require research and well as costing.

## Project

OTARN-H Investment Ltd. is a small company specialising in sales of specialised products for a niche market. Until now, the company has relied heavily on stand-alone PCs and individual dial-up access to the Internet for their work.

This year, the company won a lucrative contract and have decided to upgrade their ICT infrastructure. The Managing Director has told you that he requires a computer network to be installed into their premises. After installation, it is envisaged that the company will employ at least 10 new staff in various positions throughout the company. The Finance Manager has said that her capital budget is limited due to the Covid-19 pandemic to Rs. 5 Million. She has cited local suppliers such as http://www.itbox-ltd.com/, https://jaceycomputer.com/ and https://fastclick.mu/ that she would like you to use as she can avail discount on large orders.

You have decided to use a Class C internal network with IP address range of **192.168.100.0 /24** for the company. The internal network will have to be physically **subnetted** or **VLANed** to allow for the functions of the departments.

They have two buildings with a canal in between. Between the two buildings is a small footbridge. As the canal is navigable, you may not run cables over (or under) the canal nor across the swinging footbridge. You must connect these buildings with a data bandwidth of no less than 54 Mbps. Floor plans of the buildings and the site are annexed. The company may be characterised by its departments. Their names and functions are as follows:

**Design**
There are 5 designers in the company. Their rooms are L539, L533, L538, L534, L532. They use CAD for their designs and use high power workstations for the design work. They require two large servers for their department's data storage and applications.

**Manufacture**
This takes place in L441 and L431. In each of these rooms are two computer controlled milling machines. These already exist and will not need to be replaced.

**Secretarial**
There are 4 secretaries for the company. They occupy rooms L510 and L426. Their main role is to type and print important documents, answer emails and telephone queries.

**Management**
The managers occupy rooms L520, L440 and L416. They would like to have powerful PCs so that they can view their MIS. They would also like the ability to take part in video-conferencing. They have stated that much of the information they will be using is to remain confidential.

**Finance**
This department takes care of the company's money. They currently use room L226. Their function is to work with large spreadsheets and also to deal with the monthly payroll. As this department deals with large sums of money, the communications for this department must be secure and not reach any of the rest of the network. They require one large server for applications and data. There are currently two staff.

**R&D**
This department carries out the research and development for the company. They have room B101. The have powerful workstations (these do not need to be purchased) and often share their files with the Design team. They require two large servers for holding R&D designs and applications. There are 4 staff in this department.

**Engineering**
This department is in rooms B107 and B108. They have stated that they will require at least 4 PCs in each of these rooms, however they are unable to define the tasks that they wish to carry out with the hardware.

**Ordering and Delivery**
This department is in B102 and is responsible for shipping the manufactured items to their purchasers. There are two staff here and their work will mainly involve addressing parcels and contacting customers by email. The company will require a web server with a registered domain name (e.g. www.otarn.com) to accommodate their new website for online ordering. You do not need to design the website but you will be expected to provide the specifications for the web server hardware and ensure that the Internet connection can cope with the expected level of traffic. You should also ensure that any customer can place an order from your website.

**All Staff**

Each staff will need to separate email account under the company domain @otarn.com and 1 GB network storage. Some staff may require access to specific application software. All staff will require a new PC complete with a suitable office environment OS (unless stated otherwise) and access to a networked printer. The colour laser printer is located in Holst building. You may assume that the staff already have adequate furniture. Staff are to remain where they currently working.

The following rooms have been identified as potential locations for distribution facilities, L521, L522, L523A, L541, L431C, L400A, L422, L411, L412, B104, B105, B106, B109.

The **POP** is in Bach building in room L523A.

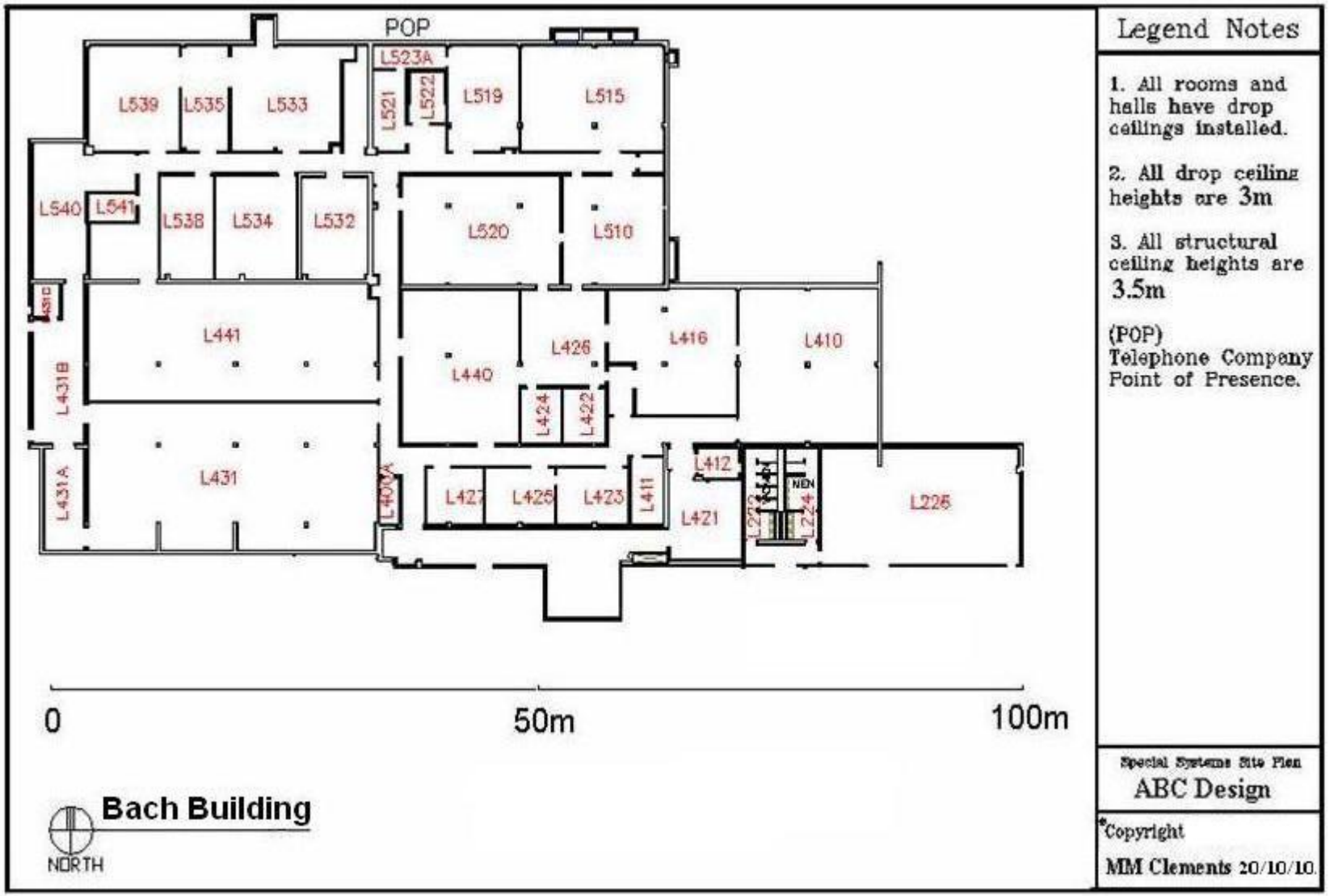
The Holst building is expected to have a high data-rate (min. 54 Mbps) connection from the Bach building. You may use any suitable wireless technology for this connection, however all communications between buildings must be secure from eavesdropping. Also, two wireless networks shall provide coverage over the two buildings: 1. Otarn-Guest, with PSK and a shared password and 2. Otarn-Staff, which users should authenticate via a RADIUS server.

## TASKS

1. Provide your solution which must include an analysis of the existing situation, your recommendations for upgrade or replacement, comprehensive logical and physical network maps; software, hardware and network configurations for major assets, design and simulation in Packet Tracer and costing within the indicative budget.

2. Mail me your report file at bcns24aft1@rishiheerasing.net preferably zipped with your group number as filename and each member index number **before the deadline in .doc (not .docx) or pdf format.** You should also include the Packet Tracer file in the zip file.

| ASSESSMENT CRITERIA | |
|---|---|
| **Logical & Physical network diagrams** | ***15%*** |
| **Software, hardware & network requirements** | ***20%*** |
| **Network configuration of clients, servers & devices** | ***15%*** |
| **Cost assessment** | ***15%*** |
| **Report Format, Research & Referencing** | ***5%*** |
| **Design and Simulation (Packet Tracer)** | ***15%*** |
| **Bonus** | ***15%*** |
| **Total** | **100 %** |




## Legend Notes

1. All rooms and halls have drop ceilings installed.

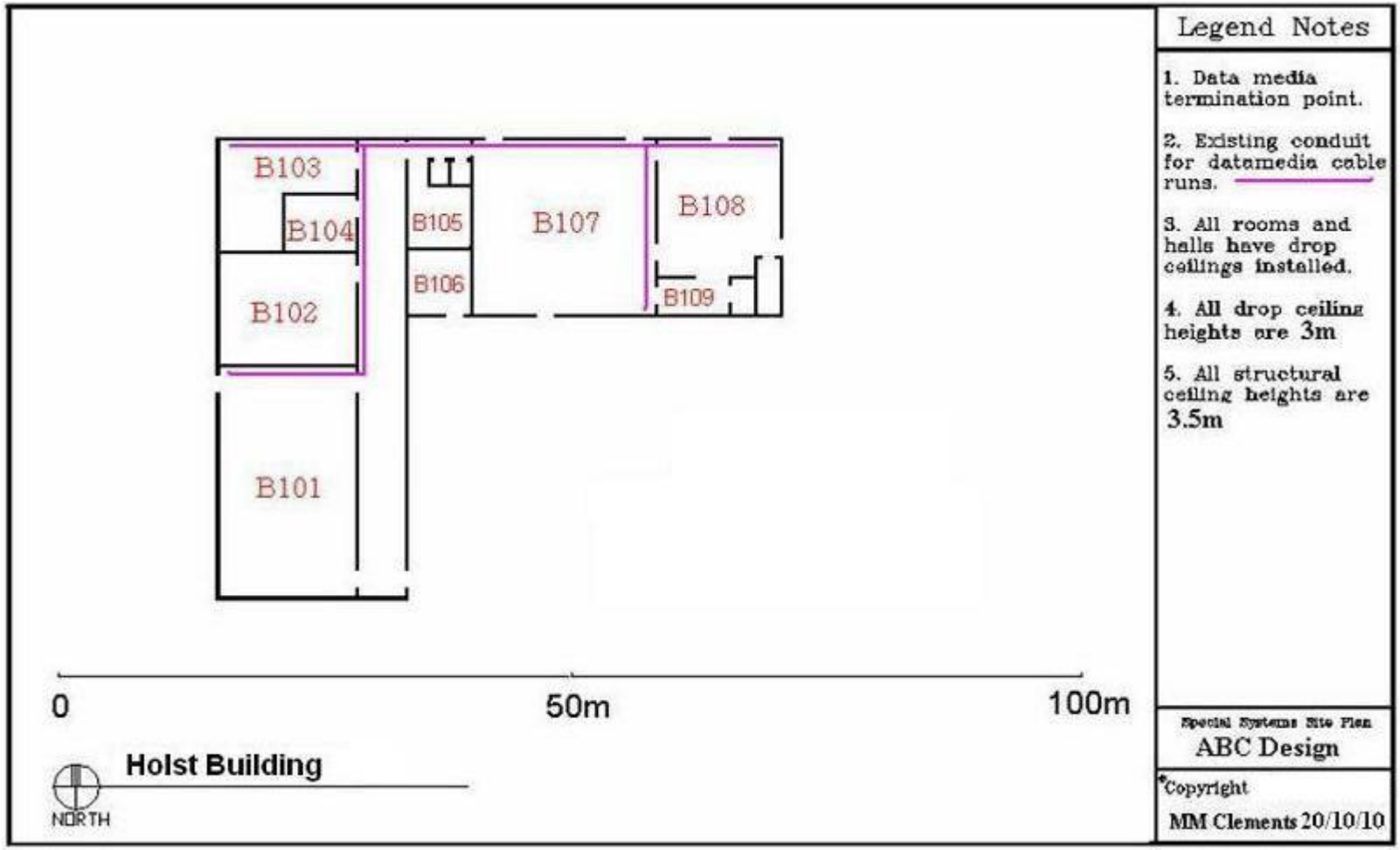
2. All drop ceiling heights are 3m

3. All structural ceiling heights are 3.5m

(POP)
Telephone Company Point of Presence.

Special Systems Site Plan

ABC Design


B103
B104
B102
B101
B105
B106
B107
B108
B109
0
50m
100m
NORTH
Holst Building
Legend Notes
1. Data media termination point.
2. Existing conduit for datamedia cable runs.
3. All rooms and halls have drop ceilings installed.
4. All drop ceiling heights are 3m
5. All structural ceiling heights are 3.5m
Special Systems Site Plan
ABC Design
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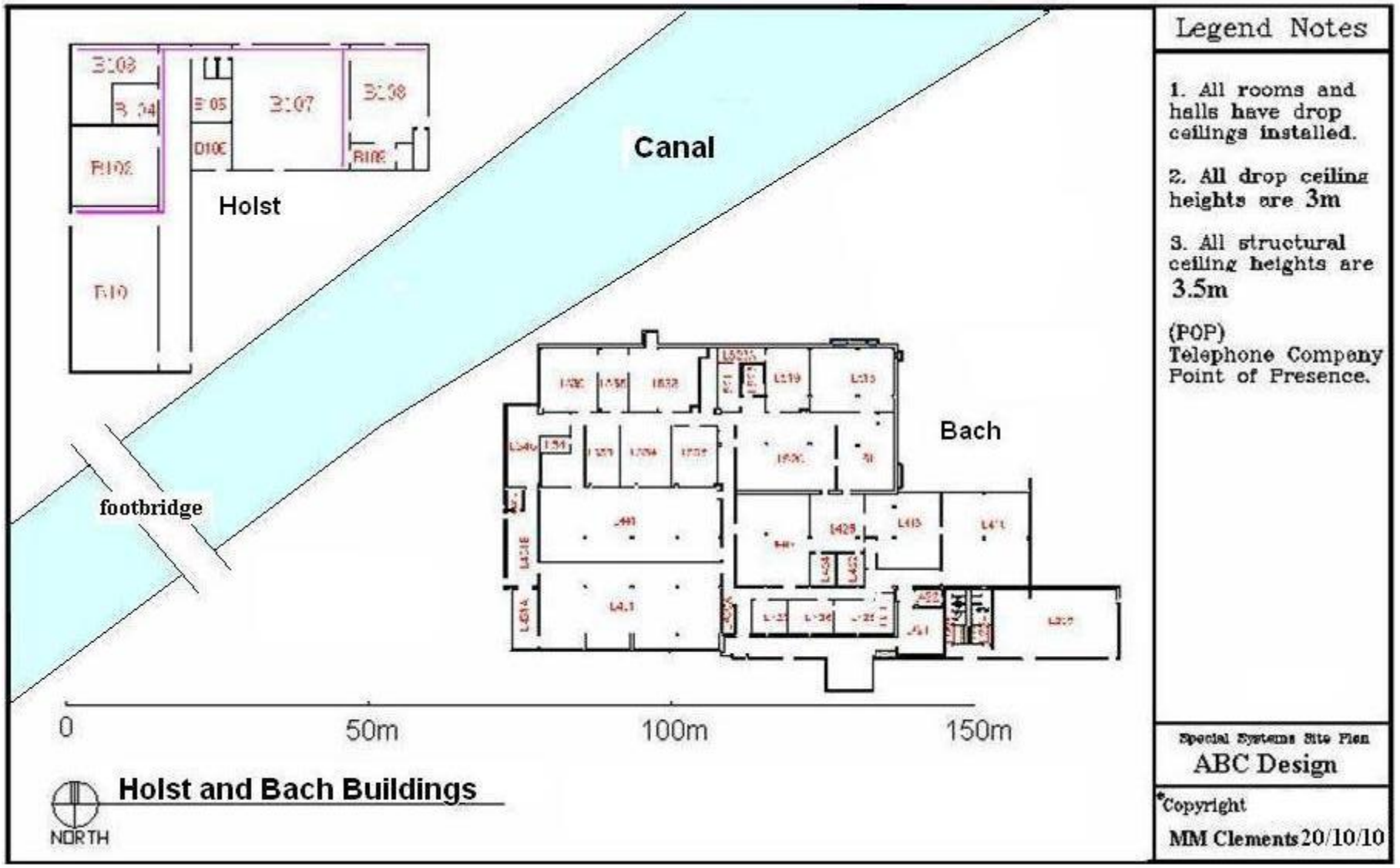


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